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ABSTRACT

Literature and research studies concerning self-fulfilling prophecy effects are reviewed in this document. Works concerning the Pygmalion Controversy, the existence of self-fulfilling prophecy effects of teacher expectations, and the strength and reality of these effects are cited. The document's sections discuss the effects of teacher expectations and: (1) the appropriateness of differential teacher expectations and teacher-student interaction patterns; (2) the mediation of self-fulfilling prophecies in the classroom; (3) the role of individual differences in teachers; (4) the role of individual differences in students; (5) conceptualizing self-fulfilling prophecy effects in the classroom; (6) implications for research; and (7) implications for teaching and for teacher education. It is concluded that a minority of teachers have major expectation effects on their students' achievement but that such effects are minimal for most teachers because their expectations are generally accurate and open to corrective feedback. (Author/JD)

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RESEARCH ON THE SELF-FULFILLING PROPHECY AND TEACHER EXPECTATIONS

Jere E. Brophy

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Abstract

The literature on self-fulfilling prophecy effects is reviewed, with emphasis on its application to inservice teachers and their students. It is concluded that a minority of teachers have major expectation effects on their students' achievement, but that such effects are minimal for most teachers because their expectations are generally accurate and open to corrective feedback. It would be difficult to predict the effects of teachers' expectations, even with knowledge of their accuracy and the degree of rigidity with which they were held, because expectations interact with beliefs about learning and instruction to determine teacher behavior (so that similar expectations may lead to different behavior), and because students will differ in their interpretation of and response to teacher behavior (so that similar behavior may produce different student outcomes).

RESEARCH ON THE SELF-FULFILLING PROPHECY AND TEACHER EXPECTATIONS[1]

Jere E. Brophy[2]

Although Merton (1948) defined and illustrated the concept of the self-fulfilling prophecy in 1948, and although Kenneth Clark (1965) and others had identified low teacher expectations as one cause of the low achievement of students in ghetto schools, it was not until publication of Rosenthal and Jacobson's (1968) Pygmalion in the Classroom that the topic of teacher expectations "arrived" on the educational scene. Since Rosenthal and Jacobson's landmark Oak School experiment, educational researchers have conducted well over 100 studies relating to teacher expectations, and writers of scholarly reviews and position papers have debated the degree to which teacher expectations appear to have self-fulfilling prophecy effects on students and have speculated about potential implications for teacher education and classroom practice. The present paper will attempt to put the controversy surrounding the original Pygmalion study into perspective, to review and integrate the large and growing body of information that has accumulated since, and to identify implications for research and teaching.

The Pygmalion Controversy

Fueled by the remarkable publicity it received, Rosenthal and Jacobson's Oak School experiment (or "The Pygmalion Study," as it

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[1]This paper was delivered as part of a symposium entitled "The Self-fulfilling Prophecy: Its Origins and Consequences in Research and Practice," at the 1982 annual meeting of the American Educational Research Association in New York City, in March, 1982.

[2]Jere E. Brophy is director of the Classroom Strategy Project and is a professor in the Department of educational psychology, College of Education at Michigan State University.

came to be called) provoked extreme reactions. Enthusiasts accepted its findings uncritically and touted it as the key to eliminating educational inequities. They seemed to believe that all students would begin to achieve at high levels as soon as teachers were trained to have high expectations for them. Meanwhile, skeptics subjected the study to unusually intense criticism, and their doubts were soon reinforced by a series of failures to replicate the study (in fact, although a great deal of evidence that teachers' expectations can function as self-fulfilling prophecies has accumulated since, no one has ever replicated the Oak School experiment in the sense of obtaining positive results with identical procedures).

I will not review all of the criticisms and rebuttals relating to the Oak School experiment, because several reviewers have already done so in considerable detail. My own belief is that although critics have made several important points, they have not succeeded in explaining away the positive results Rosenthal and Jacobson obtained in their first and second grade students (which I take to be evidence of self-fulfilling prophecy effects). Nor am I disturbed by the replication failures. They all involve attempting to induce teacher expectations through provision of phony information, and most investigators used procedures likely to bias the experiment against obtaining evidence of self-fulfilling prophecy effects (Crano and Mellon, 1978). Also, the publicity surrounding the Oak School experiment heightened teachers' awareness of expectation phenomena, and probably reduced their inclination to accept at face value whatever information an experimenter gave them about their students. Finally, the procedures used for creating expectations in these replication experiments were often considerably less credible than the ones

used in the original experiment, so that there was often good reason to believe, and occasionally direct data indicating, that the teachers involved simply did not accept the phony information and thus did not act upon it (Brophy and Good, 1974; Persell, 1977).

In summary, I am willing to accept the data on first and second grade students from the Oak School experiment as evidence of the self-fulfilling prophecy effects of teacher expectations concerning student achievement, even though no significant differences were obtained for the higher grade levels and despite numerous criticisms of this study and failures of attempts to replicate it. Others will no doubt disagree. It no longer matters, because debate about whether this study really does prove that teacher expectations can function as self-fulfilling prophecies has been rendered moot by subsequent events. Despite its historical importance, the Oak School experiment is only one of a great many studies of teacher expectation effects, and most of the criticisms directed specifically to that study are irrelevant to the larger issues at hand.

Existence of Self-Fulfilling Prophecy Effects of Teacher Expectations

Scholarly reviews of the literature on teacher expectations have been published by Finn (1972), Brophy and Good (1974), West and Anderson (1976), Dusek (1975), Braun (1976), Persell (1977), Cooper (1979), and Good (1980), among others. Taking into account the information available when each review was prepared, the authors show a remarkable degree of agreement not only about the empirical facts but about their theoretical and practical implications. Yet, there are differences in definition and interpretation that affect opinions

about the degree to which ordinary teachers' expectations of their students are likely to function as self-fulfilling prophecies.

The Reality of Self-Fulfilling Prophecy Effects

Rosenthal (1976) published a meta-analysis of over 300 studies of expectation effects in the laboratory, the workplace, and the classroom. He found that 37% of these studies reported results (significant below the .05 level) consistent with the self-fulfilling prophecy hypothesis. The percentage of positive results from classroom studies was similar to (actually slightly higher than) the overall percentage. Most nonsignificant differences also favored the self-fulfilling prophecy hypothesis, and significant differences in the opposite direction were below chance levels for the laboratory studies and nonexistent in the classroom studies.

These data imply that teacher expectations do not always or automatically function as self-fulfilling prophecies, but that they can and often do have such effects. To put it another way, the existence of a teacher expectation for a particular student's performance increases the probability that the student's performance will move in the direction expected, and not in the opposite direction. Detailed reviews of the teacher expectation literature by Brophy and Good (1974) and by Persell (1977) support these findings, as does a meta-analysis of this literature conducted by Smith (1980).

The Strength of the Self-Fulfilling Prophecy Effect in the Classroom

At this point, few if any reviewers or critics of the expectation effects literature would deny that expectations can and often do have self-fulfilling prophecy effects. However, many writers

who accept the reality of expectation effects in controlled laboratory situations or various social settings nevertheless either deny or play down the notion that teachers' expectations have self-fulfilling prophecy effects on student performance (particularly achievement) in naturalistic classroom settings. In addition, among the majority of reviewers who do accept the notion that teachers' expectations can function as self-fulfilling prophecies, there are differences of opinion concerning the generality and strength of the phenomenon.

In part, these differences of opinion hinge on differences in how expectation effects should be defined and what kind of evidence should count as definitive. West and Anderson (1976), for example, count as evidence supporting expectation effects only those studies in which expectations were induced in teachers (using phony information assigned randomly to individual students) before the teachers had an opportunity to interact with the students and form their own expectations. Studies in which teachers' naturally formed expectations were assessed after they had become acquainted with their students are discounted on the ground that any relationships between these expectations and measures of teacher-student interaction or student outcomes are more likely to represent the effects of student behavior and achievement on teacher expectations than the opposite. This approach to the evidence considerably weakens the case for teacher expectation effects in ordinary classrooms, because the strongest evidence comes from studies in which teachers' naturally formed expectations were assessed after they had interacted with their students, rather than from studies in which expectations were induced with phony

information. West and Anderson conclude that teacher expectation effects on student achievement are probably weak relative to student achievement effects on teacher expectations in ordinary classrooms. Yet, this leaves them in close agreement with Brophy and Good (1974), who stressed the importance of teacher expectations but argued (for reasons similar to those expressed by West and Anderson), that the self-fulfilling prophecy effects attributable to those expectations are probably relatively small (producing perhaps a 5-10% difference in student achievement) in most classrooms.

Dusek (1975) distinguished what he called "bias effects" from what he called "expectancy effects." By "bias effects," he meant the same thing that West and Anderson (1976) defined as expectation effects: The self-fulfilling prophecy effects of induced expectations (biases) based on phony information supplied to teachers. By "expectancy effects," he meant effects on teacher-student interaction and student achievement that result from the expectations that teachers form naturalistically in the process of observing and interacting with their students. Dusek concluded that there was little evidence suggesting widespread bias effects in ordinary classrooms, but much evidence suggesting expectancy effects.

Cooper (1979) and Cooper and Good (in press) distinguish between differential teacher treatment of different students that *maintains* existing student differences and differential teacher treatment that increases or *enhances* these differences. They argue that the former teacher behaviors are more accurately construed as responses to differential student behavior and thus as evidence of student effects on

teacher behavior than as self-fulfilling prophecy effects of teacher expectations. *The latter term would apply most appropriately only to those teacher behaviors that involve treating different students as even more different than they actually are, and thus creating a press toward making the students become even more different than they actually are.* Like Dusek (1975), these authors conclude that although there is much evidence that teachers typically *maintain* rather than compensate for differences in students, there is relatively little evidence that teachers routinely *enhance* existing differences in ways that would produce sizeable self-fulfilling prophecy effects.

In general, various scholarly reviews agree on the following points, at least implicitly. First, a great deal of evidence supports the notion that expectations can function as self-fulfilling prophecies. Such effects are demonstrated frequently, and are often quite strong, in experimental situations. Secondly, however, the evidence for self-fulfilling prophecy effects of teacher expectations on student achievement in ordinary classrooms is much weaker and more equivocal. It is true that teachers' expectations collected early in the year predict student achievement at the end of the year, but these correlations mostly reflect accurate teacher expectations based on observation of students rather than self-fulfilling prophecy effects. Similarly, although there are relationships between teacher expectations, teacher-student interaction, and student achievement, most of these are more accurately construed as student effects on teachers than as teacher expectation effects on students. Most differential teacher expectations are accurate and reality-based, and most differential

teacher interaction with students represents either appropriate, proactive response to differential student need, or at least understandable reactive response to differential student behavior. Thus, thirdly, although the potential for teachers' expectations to function as self-fulfilling prophecies always exists, the extent to which they actually do so in typical classrooms is probably limited, averaging perhaps a 5-10% effect.

Studies employing path analysis or effect size estimate procedures support this conclusion. Williams (Note 1), Humphreys and Stubbs (1977), and Crano and Mellon (1978) all showed some evidence of association between teacher expectations for student achievement and measured student achievement adjusted for prior achievement level. Although none of these studies specified percentages, Crano and Mellon (1978) concluded that linkages between expectations and adjusted achievement that implied self-fulfilling prophecy effects of teacher expectations were small in absolute size, certainly smaller than the effects of student achievement on teachers' expectations. McDonald and Elias (Note 2) reported that teachers' expectations accounted for 3-9% of the variance in adjusted achievement scores in various subsamples of the teachers they studied. Brattesani, Weinstein, Middlestadt, and Marshall (Note 3) obtained a figure of 7% in their study. Smith (1980), in her meta-analysis of classroom expectation research, reported teacher expectation effect sizes of .69 on teacher judgment, .30 on teacher behavior, .38 on student achievement, and .16 on student IQ.

These studies and reviews hang together to support the conclusion that teacher expectations do have self-fulfilling prophecy

effects on student achievement levels, but that these effects make only a 5-10% difference, on the average. Even this conclusion is not completely definitive, because of problems in measuring achievement and change in achievement that introduce ambiguities even when repeated measures are available and used as covariables. The problem is that tests are samples of student achievement and thus are subject to sampling error as well as other sources of measurement error such as situational differences in student alertness and motivation. Teachers have a much greater base of information upon which to draw in making predictions about student achievement, and thus may often have very good reasons for predicting that certain students will score higher or lower than their pretest scores indicate. Thus, at least some of the independent contribution of teacher expectations to the prediction of adjusted achievement test scores must be assigned to accuracy of teacher prediction based on observation of students, and not to the self-fulfilling prophecy effects of teacher expectations. Thus, even the path analysis and effect-size approaches to the problem are not completely satisfactory. Implications here include the probability that no attempt to come up with an unambiguous average effect size for self-fulfilling prophecy effects will ever be successful, and that the actual average effect size is probably closer to the five percent level than the ten percent level within the range suggested by Brophy and Good (1974).

These conclusions clearly imply that even ideal teacher education related to the topic of teacher expectations will not work miracles in our schools, but they do *not* imply that the topic is

unimportant. Even a five percent difference in educational outcomes is an important difference, the moreso as it is compounded across school years. Furthermore, the presentation so far has been confined to consideration of the average effect across all teachers of expectations concerning student achievement. The story becomes much more complicated, and the implications for teacher education much more obvious, when we turn attention to other kinds of expectations and to differences among teachers in predisposition to expectation effects. I will address these topics after first setting the stage by considering normative data that describe the context within which teacher expectations and teacher-student interaction data should be analyzed.

The Appropriateness of Differential Teacher Expectations and Teacher-Student Interaction Patterns

Discussions of teacher expectations sometimes imply or even state that these expectations are based on dubious inferences from irrelevant information or are impervious to input or change. Similarly, discussions of differential patterns of teacher-student interaction often imply that equality should be the expected norm, and that any differential patterns observed are evidence of teacher favoritism of some students and bias against others. *These notions represent invalid generalizations from laboratory experiments to the naturalistic classroom setting.* Studies of ordinary teachers' expectations for and interactions with their regular students yield a very different picture.

The Accuracy and Flexibility of Teachers' Expectations

Expectation formation studies in which subjects are given only carefully controlled information about, and little or no opportunity to interact with the "students" (usually fictional) about whom they are asked to make predictions typically show that expectations can be affected significantly by information about test performance, performance on assignments, track or group placement, classroom conduct, physical appearance, race, social class, ethnicity, sex, speech characteristics, and various diagnostic labels (see reviews by Braun, 1976; Brophy & Good, 1974; and Persell, 1977). Ultimately, this list could be extended to include any factor that is known or believed to be associated with student achievement, or indeed any factor likely to induce a positive or negative halo image of the student being described. However, the fact that experimental subjects working with very limited information sometimes develop expectations based on inappropriate evidence does not mean that teachers typically do the same.

Studies of inservice teachers' expectations for their actual students reveal that most teacher perceptions of students are accurate and based on the best available information, and that most of the inaccurate ones are corrected when more dependable information becomes available (Borko, Cone, Russo, & Shavelson, 1979; Brophy & Good, 1974; Shavelson, Cadwell, & Izu, 1977; Willis, Note 4). Teachers form expectations based on school records (especially test scores) and on what they hear about students from other teachers, and they develop their own impressions right from the beginning of the school year. Most of the information in the school records is accurate and likely

to induce accurate expectations in teachers who read it, and the impressions that teachers form from interacting with their students, even in the first few days of the year, are based primarily on their participation in academic activities and their performance on assignments, and not on physical or other status characteristics. Teachers' predictions about student achievement are usually quite accurate, sometimes even more accurate than predictions based on test data.

Several implications follow from this body of data. First, teachers' expectations are generally accurate, reality based, and open to corrective feedback. This limits the degree to which they are likely to accept and act upon information supplied by an experimenter who is trying to mislead them. Furthermore, even those teachers who did accept such information initially would likely come to discount it before long, because they would remain open to newer and better information. This is almost certainly a major reason for the unimpressive results of most attempts to replicate the Oak School experiment in inservice teachers' classrooms.

That teachers' expectations tend to be accurate, reality based, and open to corrective feedback also explains why their self-fulfilling prophecy effects only make about a 5% difference in student achievement on the average. *Expectations can function as self-fulfilling prophecies (as opposed to mere accurate predictions) only when they involve sustained, systematic over- or under-estimates of students' actual achievement potential.* Although minor inaccuracies are to be expected, few teachers will sustain grossly inaccurate expectations for many of their students in the face of daily feedback that contradicts those expectations.

Finally, it should be noted that the potential for particular teacher expectations to exert self-fulfilling prophecy effects on students depends not so much on the degree to which the expectations are initially accurate or reality based as on the degree to which the expectations remain *open to corrective feedback* and thus flexible or adjustable in view of current events. Self-fulfilling prophecy effects can be expected when inaccurate expectations are maintained despite evidence to the contrary, but not when even grossly inaccurate expectations are quickly corrected. A variation on this point is that even initially justified expectations can lead to self-fulfilling prophecy effects if those expectations are rigidly maintained despite upward or downward trends in the student's performance levels that should dictate a change in those expectations. In any case, *the probability of self-fulfilling prophecy effects depends not only on the existence of relatively inaccurate teacher expectations, but on the degree to which those inaccurate expectations are rigidly maintained and consistently projected to the student.*

Differential Student Behavior and Its Effects on Teachers

It is difficult to discriminate appropriate differential treatment of students from biased treatment likely to produce self-fulfilling prophecy effects. Part of the problem is that research on effective teaching, although an active and growing field, is still in its infancy (Brophy, 1979), so that even when differential patterns of teacher-student interaction are documented for high versus low expectancy groups, the implications (if any) for the achievement progress of these students are often unknown. Another complicating

factor is that students differ in intelligence, achievement motivation, classroom conduct, and all of the other cognitive and personality variables relevant to teaching and learning, and these differences exert pressures on teachers and condition their behavior in part. For example, group difference comparisons indicate that, compared to low achievers, high achievers tend to be more attentive to lessons and engaged in tasks, more likely to volunteer to answer questions or offer comments, more likely to respond correctly when called on and to complete independent work assignments without help, to desire and expect a businesslike emphasis on teaching and learning academic content, to cooperate with the teacher's rules and expectations most of the time, and to share a positive or at least neutral relationship with the teacher rather than a relationship marked by conflict or alienation (Brophy, Evertson, Anderson, Baum, & Crawford, 1981; Brophy and Good, 1974; Metz, 1978; Noble and Nolan, 1976; Evertson, Note 5).

Given that teacher expectations are largely accurate, these differences typically observed between high and low *achieving* groups can also be expected in comparisons of high teacher *expectation* groups with low teacher expectation groups (in effect, the students in the high expectation groups are the high achievers, and the students in the low expectation groups are the low achievers). Consequently, one cannot interpret data on differential teacher interaction patterns with high versus low expectation groups by starting with the assumption that all differences are due to teachers' expectations. Clearly, if teachers merely react consistently to the student behavior that

confronts them, group statistics will reveal that the high expectation students receive more response opportunities (because they volunteer and call out more often), have more academic and fewer procedural or behavioral interactions with the teacher (because they are oriented more toward academic learning, can work more independently without supervision, and seldom become disruptive), receive more praise (because they are generally well behaved and because they succeed academically more often), and receive less criticism (because they show less classroom disruption and academic failure).

These student differences observed between subgroups in heterogeneous classes become magnified when students are tracked and thus taught in more homogeneous classes. Higher track classes will be more intellectually stimulating and demanding, and lower track classes more prone to outbreaks of disruption or hostility (Metz, 1978). Even studies of the same teachers teaching the same general subject matter to different classes have reported that the teachers were more able to concentrate on the academic content and use more discussion and other group participation methods of instruction with the high track classes, whereas in low track classes their attempts to sustain group focus on academic lessons were frequently interrupted by disruptive behavior or frustrated by low participation or resistance, so that the teachers felt it necessary to plan shorter and more structured group activities and to rely more on seatwork assignments (Metz, 1978; Evertson, Note 5).

The differential pressures that high versus low expectation (i.e., high vs. low achieving) students exert on teachers mean that highs

create more public response opportunities and academic interactions for themselves than lows do, and present their teachers with more opportunities to praise or reinforce them. Lows, in contrast, present their teachers with fewer opportunities to call on them or to reinforce them for academic success, and they force their teachers to criticize or discipline them more often for off-task behavior or disruption. The extent and intensity of these differential pressures will vary with the makeup of the classroom, so it seems unlikely that any single set of norms can ever be equally applicable to all classrooms for use in judging the degree to which the teacher is exacerbating, merely reacting to, or compensating for existing student differences. It is clear, however, that *some degree of group difference along the lines discussed here, and not equality or lack of group difference, should be expected,* and should be interpreted as evidence of student effects on teacher behavior rather than evidence of biased teacher treatment related to self-fulfilling prophecy effects. Furthermore, to the extent possible, *classroom process measures should be adjusted for differences in the frequencies and types of opportunities that students present to their teachers.* Praise following correct answers, for example, can be interpreted more meaningfully when it is expressed as the percentage of a given student's correct answers that were followed by praise than when it is expressed merely as a frequency of such praise that does not take into account the number of times that the student answered correctly and thus presented the teacher with an opportunity for praise.

Situational Constraints on Teacher Behavior

In addition to the reasons discussed so far, interpretation of differential patterns of teacher-student interaction is complicated by situational or context factors (Brophy & Evertson, 1978). Grade level is one example. In the upper elementary grades and the secondary grades, most teachers use a whole-class, public presentation/recitation/discussion method, and the emphasis is on teaching and learning the content. Individualized dyadic interactions with individual students are infrequent, except when the teacher calls on a student to contribute to a recitation or discussion. Probably because of the public setting, teacher praise and criticism of students is infrequent, as is interaction for social or personal rather than academic reasons. Consequently, most group differences will be quantitative--differences in the sheer frequency of contribution to class activities and interactions with the teacher (Brophy et al., 1981; Brophy & Good, 1974).

In the early grades, however, teachers spend a lot of time developing personal relationships with their students and socializing them to the role of pupil in addition to teaching them academic content. Furthermore, there is much use of small group instruction, almost universally for reading and often for other subjects as well. High achievers dominate whole-class interactions, as in the higher grades, but teachers have a greater opportunity to compensate for this quantative difference in student participation by interacting with low achievers more often in small group and individualized settings, and most of them do so. Consequently, there may be few if any differences in

total contacts with the teacher, although breakdowns will reveal that more of the high achievers' interactions with the teacher occur in public, large group settings, and that more of them are initiated by the student rather than the teacher. In any case, the most striking differences in patterns of interaction with high and low achievers in these early grades are often in qualitative rather than quantitative measures. High achievers (and thus, high expectation students) may not interact with the teacher more often than low achievers, but when they do, they may be treated with more warmth, support, encouragement, or respect.

Group size and pacing factors are also relevant. Teachers who are conducting lessons with the whole class have to keep things moving along at a good pace, or they will soon find themselves defeated by problems of inattention and disruption (Kounin, 1970). Thus, in this setting it is more difficult for the teacher to wait patiently for a response or take time to reteach a confused individual than it is in small group or individualized settings. Consequently, although data collected in whole class settings often give the impression of teacher favoritism of high expectation over low expectation students, data taken in small group settings often show few differences or even indications of teacher attempts to work more intensively with low expectation students (Alpert, 1974; Weinstein, 1976).

Time of year is another important factor. Early in the year, expectations are held loosely and teachers allocate extra time to low achievers in an attempt to keep the whole class or group together. As time goes on, however, teachers may become discouraged when their

best efforts with certain students consistently fail. Furthermore, as time begins to run out, felt pressures to get through the curriculum will increase, leading to stepped up pacing and more concentration on high than low achievers (Lundgren, 1972; Good, Cooper, & Blakey, 1980). Thus, data taken early in the year are likely to suggest teacher attempts to compensate for existing student differences, whereas data taken late in the year are more likely to suggest self-fulfilling prophecy effects of teacher expectations (Brophy & Good, 1974; Persell, 1977).

The nature of the content being taught is also relevant. With tasks of familiar content and predictable difficulty level, both teachers and students will be able to draw upon a rich backlog of relevant experience to form accurate expectations, so that self-fulfilling prophecy effects are unlikely. However, when new content or skills are being introduced (Braun, 1976), and especially when students are dependent on the teacher rather than out-of-school experiences or their own independent learning efforts to master the new content or skills (West & Anderson, 1976), there is much greater opportunity for self-fulfilling prophecy effects to occur.

In summary, then, situational or context factors affect the degree to which teachers are likely to be oriented toward, or presented with opportunities for, differentiating in their interactions with different students. These factors affect both the likelihood of such differentiation and the form that the differentiation will take if it does occur. Only a portion of such differentiation will be due to teachers' expectations exerting self-fulfilling prophecy effects.

The Mediation of Self-Fulfilling Prophecies in the Classroom

Much of the teacher expectation research of the late 1960's and early 1970's was concentrated on the issue of whether or not such expectations function as self-fulling prophecies. However, a second major line of research was begun by investigators who were already convinced that the effect was real but who wanted to gather more information about how the effect was mediated.

Rosenthal and Jacobson (1968) did not address this issue directly, but Beez (1968) had included observational data in his study of tutors working with Headstart children, and shown that tutors with high expectations attempted to teach more words to their children than did tutors with low expectations. This was one of several demonstrations that teacher expectations can have direct effects on student learning by affecting student opportunity to learn: Differences in expectations lead to differences in what is taught, which in turn lead to differences in what is ultimately learned.

Brophy and Good (1970b) hypothesized that teacher expectations could also affect student outcomes indirectly by leading to differential teacher treatment of students that would condition student attitudes, expectations, and behavior. They initiated a series of studies linking teachers' naturalistic expectations for different students to differential patterns of teacher-student interaction in the classroom, guided by the following model:

1. Early in the year, teachers form differential expectations for student performance.

2. Consistent with these differential expectations, teachers before differently toward different students.

3. This differential teacher behavior communicates to each individual student something about how he or she is expected to behave in the classroom and perform on academic tasks.

4. If teacher treatment is consistent over time, and if students do not actively resist or change it, it will likely affect student self-concept, achievement motivation, level of aspiration, classroom conduct, and interactions with the teacher.

5. These effects generally will complement and reinforce the teacher's expectations, so that students will conform to these expectations more than they might have otherwise.

6. Ultimately, this will make a difference in student achievement and other outcomes, indicating that teacher expectations can function as self-fulfilling prophecies.

The Brophy and Good (1970b) study revealed several differences in dyadic teacher-student interaction patterns between high and low expectation groups. Many of these were differences of the kind discussed above as more likely to represent student effects on teachers than teacher expectation effects on students: High expectation students raised their hands to volunteer to answer questions more often, initiated more interactions with the teachers, gave correct answers more often, had fewer problems in reading during reading groups, were criticized for misbehavior less often, and received more praise and less criticism generally. In addition, however, there were several differences in teacher treatment of high versus low expectation students that did not seem explainable as student effects on the teachers. First, differences in teacher praise and criticism of students appeared not only in frequency measures but also in percentage measures adjusted for student performance. Even though they succeeded much more often and failed less often, high expectation students were more likely than low expectation students to be

praised when they did succeed (percentage of success responses followed by praise), and less likely to be criticized when they failed (percentage of failures followed by criticism). Another difference was in teacher failure to give specific feedback as to the correctness of student responses. Teachers failed to provide such feedback to high expectation students only about 3% of the time, but failed to give feedback to low expectation students almost 15% of the time. Finally, there were differences in teachers' tendencies to seek an improved response when students hesitated during reading, failed to answer a question, or answered incorrectly. Compared to their behavior with low expectation students, the teachers were more likely to repeat the question, give a clue, or simplify through rephrasing when working with high expectation students, and were less likely to give up by providing the answer or calling on someone else. Such differential teacher treatment of students would likely increase, and not merely maintain, existing student differences, thus producing self-fulfilling prophecy effects of teacher expectations on student achievement.

Differential Treatment of Individual Students in the Same Group or Class

Other research focused on differences in dyadic teacher-student interaction revealed a variety of potential mediators of teacher expectation effects. Rosenthal (1974), reviewing research done up to that time, identified four relevant factors. Focusing on positive expectation effects, Rosenthal hypothesized that teachers will maximize student achievement if they:

1. create particularly warm social-emotional relationships with their students (climate);

2. give them more feedback about their performance (feedback);

3. teach them more (and more difficult) material (input); and

4. give them more opportunities to respond and to ask questions (output).

This four-factor model brings together many of the findings concerning mediation of expectation effects, and probably is sufficient for purposes of developing relevant social psychological theory. Educators, however, can benefit from a longer and more specific list of potential mediation mechanisms for use in educating and training teachers. Furthermore, because of a particular concern about low expectation students, and because the research suggests that, unfortunately, teachers are more likely to be affected by information leading to negative expectations than information leading to positive expectations (Mason, 1973; Persell, 1977; Seaver, 1973), there is a need for particular focus on how low expectations can cause teachers to limit students' progress. Brophy and Good (1974, pp. 330-333) listed the following as mechanisms through which teachers might minimize the learning progress of low expectation students (lows). The list was originally compiled on the basis of research published through 1973, but more recent references are given, as well.

1. Wait less time for lows to answer (Allington, 1980; Rowe, 1974; Taylor, 1979).

2. Give lows the answer or call on someone else rather than trying to improve their response through repeating the question, providing clues, or asking a new question (Brophy & Good, 1970b; Jeter & Davis, Note 6).

3. Inappropriate reinforcement: rewarding inappropriate behavior or incorrect answers by lows (Kleinfeld, 1975; Rowe, 1974; Weinstein, 1976; Amato, Note 7; Fernandez, Espinosa, & Dornbusch, Note 8; Taylor, Note 9).

4. Criticizing lows more often for failure (Babad, Inbar & Rosentha, in press; Brophy & Good, 1970b; Cooper & Baron, 1977; Good et al., 1980; Good, Sikes & Brophy, 1973; Rowe, 1974; Smith & Luginbuhl, 1976; Jones Note 10; Medinnus & Unruh, Note 11).

5. Praising lows less frequently than highs for success (Babad et al., in press; Brophy & Good, 1970b; Cooper & Baron, 1977; Firestone & Brody, 1975; Good et al., 1980; Good et al., 1973; Martinek & Johnson, 1979; Page, 1971; Rejeski, Darracott & Hutslar, 1979; Meddinus & Unruh, Note 11; Spector, Note 12).

6. Failure to give feedback to the public responses of lows (Brophy & Good, 1970b; Good et al., 1973; Jeter & Davis, Note 6; Willis, 1970).

7. Generally paying less attention to lows or interacting with them less frequently (Adams & Cohen, 1974; Blakey, 1970; Kester & Letchworth, 1972; Page, 1971; Rist, 1970; Rubovits & Maehr, 1971; Given, 1974).

8. Calling on lows less often to respond to question (Rubovits & Maehr, 1971; Davis & Levine, Note 13; Mendoza, Good & Brophy, Note 14).

9. Seating lows farther away from the teacher (Rist, 1970).

10. Demanding less from lows. This shows up in a variety of ways. Beez (1968) not only found that tutors with high expectations attempted to teach more words to their students than teachers with low expectations did, but that they taught with more rapid pacing and less extended explanation and repetition of definitions and examples. The studies of inappropriate reinforcement mentioned above indicate that teachers may accept low quality or even incorrect responses from low-expectation students. Several studies found that teachers are more likely to attempt to improve a poor response from a high expectation student than from a low expectation student. In addition, Evertson, Brophy, and Good (Note 15) found that when they did attempt to improve responses, teachers were more likely to simply repeat the question to high-expectation students but to give help or clues to low-expectation students. Other differences fitting in this category are discussed in the following section on differential treatment of groups and classes.

11. General differences in type and initiation of individualized interactions with students: Teachers interact with low expectation students more privately than publicly, and monitor and structure their activities more closely (Brophy & Good, 1974 discuss these differences in detail).

Teachers may also impede the learning progress of low-expectation students in the following ways, which were omitted from the Brophy and Good (1974) list or were identified since that list was compiled:

12. Differential administration or grading of tests or assignments, in which high- but not low-expectation students are given the benefit of the doubt in borderline cases (Finn, 1972; Cahen, Note 16; Heapy & Seiss, Note 17).

13. Less friendly interaction with low-expectation students, including less smiling and other non-verbal indicators of support (Babad et al., in press; Chaikin, Sigler, & Derlaga, 1974; Kester & Letchworth, 1972; Meichenbaum, Bowers, & Ross, 1969; Page, 1971; Smith & Luginbuhl, 1976).

14. Briefer and less informative feedback to the questions of low-expectation students (Cooper, 1979; Cornbleth, Davis, & Button, Note 18).

15. Not only less smiling and non-verbal warmth, but less eye contact and non-verbal communication of attention and responsiveness (forward lean, positive head nodding) in interaction with lows (Chaikin et al., 1974).

16. Less intrusive instruction of lows/more opportunity for them to practice independently (Anderson & Rosenthal, 1968; Beez, 1968; Allington, 1980; Brophy, et al., 1981).

17. Less use of effective but time consuming instructional methods with lows when time is limited (Swann & Snyder, 1980).

Differential Treatment of Intact Groups or Classes

The research discussed so far, and in fact most of the research on teacher expectations that has been completed so far, has concentrated on teachers' differential expectations for and interactions with students in the same group or class. Rosenthal and Jacobson (1968) established this as a pattern in experimental studies, and Brophy and Good's (1970a) development of a system for coding dyadic teacher-student interaction influenced the approach taken in much of the naturalistic classroom research. Yet, teachers' differential expectations for individual

students within the same group or class are but variations around the norms established by their expectations for the group or class as a whole. The potential for self-fulfilling prophecy effects is probably at least as great for these more general expectations as it is for expectations regarding specific individual students.

Research on teacher effectiveness (Brophy & Evertson, 1976; McDonald & Elias, Note 2) and on school effectiveness (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Edmonds, 1979; Rutter, Maughan, Mortimore, Ouston, & Smith, 1979) both indicate that higher expectations for student achievement are part of a pattern of differential attitudes, beliefs, and behaviors that characterize teachers and schools who are successful in maximizing their students' learning gains. Brookover et al. (1979), for example, found that in effective schools the teachers not only held higher expectations but acted on them by setting goals expressed as minimally acceptable levels of achievement (floor levels), and not by using prior achievement data to establish arbitrary ceiling levels beyond which the students would not be expected to progress. Teachers with higher expectations responded to failure as a challenge, requiring the students to redo failed work (with individualized help from the teachers as needed) rather than writing the students off or referring them to remedial classes. They responded to mistakes and response failures with appropriate feedback and reinstruction rather than lowering of standards or inappropriate praise.

Other research on differential treatment of intact groups and classes also suggests potential mediators of expectation effects. Reading group research indicates that teachers tend to give longer

reading assignments (Pflaum, Pascarella, Boswick, & Auer, 1980) and to be generally more demanding (Haskett, 1968) with their high groups than their low groups. They are quicker to interrupt low-group students when they make a mistake in their reading (Allington, 1980) and more likely to simply give the low-group students the word or prompt them with graphemic (phonetic) cues rather than semantic or syntactic cues designed to help them intuit the word from the context (Allington, 1980; Pflaum, et al., 1980).

In addition to such studies of differential treatment of groups within the same class, more research is beginning to accumulate on differential teacher treatment of different intact classes, especially classes that differ in student achievement level due to tracking systems in the schools. Evertson (Note 5) identified several ways in which the behavior of the students slowed down academic pacing and shifted time allocation from academic to procedural or behavioral matters in low-track classrooms. In the process, however, she also noted differences in teacher behavior between high- and low-track classrooms that suggest teacher expectation effects rather than student effects on the teachers. Compared to their behavior in higher track classrooms, many teachers were observed to be less clear about their objectives, to introduce material less clearly or completely, to make less attempt to relate the content to student interests and backgrounds, to be less reasonable in their work standards, to be less consistent in their discipline, and to be less receptive to student input in low-track classes.

In general, reviews of tracking suggest that it tends to have minor benefits for high-track students but major disadvantages for students placed into low tracks (Persell, 1977). Despite ideology indicating that students should move back and forth between tracks as individual needs dictate, there is usually remarkably little movement between tracks once students have been assigned, and most of the movement that does occur tends to be downward movement (see reviews by Brophy & Good, 1974, and Persell, 1977).

Teachers tend to plan and implement more independent projects and to introduce more high level or integrative concepts with high track classes (Heathers, 1969), but to stress more structured assignments dealing with basic facts and skills in the low track classes (Borko, Shavelson, & Stern, 1981). In addition, teachers appear to plan more thoroughly for high track classes, wanting to be prepared for the academic challenges these classes present. In contrast, they may be much less well prepared for low track classes, where they are much more likely to spend time correcting papers or to allow students to do activities of their own choosing rather than to spend the time teaching academic content (Brookover et al., 1979; Keddie, 1971; Leacock, 1969; Rosenbaum, 1976).

In addition to these differences documented in systematic research, the more general literature on tracking, educational equity, and related issues suggests a variety of other ways in which expectations may lead to differential treatment producing self-fulfilling prophecy effects: testing and diagnostic labeling practices, special education placement

and instructional practices, counseling practices relating to information and advice given about later educational or occupational opportunities, degree to which tracked students have opportunities to interact with students from other tracks or to be instructed in heterogeneous groupings, frequency of contact with parents and responsiveness to their concerns.

The opportunities for undesirable self-fulfilling prophecy effects on the achievement of low expectation students are maximized when these students spend all of their time segregated into separate classes or (through de facto segregation) separate schools. Under these conditions, such students will not even have the opportunity to find out about what they are missing, and low expectations are more likely to become entrenched norms that channel teacher and student behavior without ever being seriously questioned. In any case, differential teacher treatment of intact groups and classes may well be a much more widespread and powerful mediator of self-fulfilling prophecy effects on student achievement than differential teacher treatment of individual students within the same group or class, even though it has received less attention in the expectation literature. A simple but instructive example of how powerful such effects can be is seen in the cross-cultural study by Pidgeon (1970), who found that British fourth graders learned considerably more mathematics than comparable American fourth graders simply because of differences in the expectations of curriculum developers in the two nations. That is, the British students learned more because they were taught more, due to differences in the content covered and expected pacing built into the curricula they were using.

Conclusions and Cautions About Mediation of Expectation Effects

The findings reviewed in this section make it clear that teachers sometimes differentially interact with individual students, groups, or classes in ways that seem likely to maximize the achievement progress of high expectation students but limit the progress of low expectation students. To the extent that this occurs in the behavior of a given teacher, that teacher's expectations for student achievement are likely to function as self-fulfilling prophecies. Several qualifications and complications must be kept in mind in drawing implications from this conclusion, however.

First, although the forms of differential treatment listed above have been documented in at least one study, they do not occur in all teachers' classrooms. As noted previously, the potential for self-fulfilling prophecy effects of teacher expectations for a given student depend on the degree to which the teacher consistently projects relatively inaccurate expectations to the student. Teachers differ considerably in whether and how they do this, and consequently in the degree and nature of expectation effects they have on their students (see next section).

Secondly, most teacher expectation effects are mediated not only by teacher behavior but by student reaction to that behavior, as Brophy and Good (1970b) noted in their original model. Just as teachers differ in their projection of expectations, students differ in their susceptibility to being conditioned by these expectations (see later section).

Third, despite appearances to the contrary, it is possible that many of the differential teacher-student interaction patterns discussed in this section represent student effects on teachers rather than teacher

expectation effects on students, at least in part. Some low expectation students are so behind in achievement and so unresponsive to or alienated from their teachers that sustained determination and perhaps extraordinary efforts may be required to involve them in academic activities in ways comparable to the involvement of higher achieving and more compliant students. Thus, the absence of group differences or even a pattern of small differences seemingly favoring the high expectation students may actually represent considerable teacher effort to compensate for student differences, and not merely the absence of clear bias against low expectation students.

Finally, it should be noted that *some of these forms of differential treatment may be appropriate*. Just as we cannot assume that all differential patterns represent teacher effects on students rather than vice versa, we cannot assume that even those differences that do represent teacher effects on students necessarily represent inappropriate favoritism of high expectation students or bias against low expectation students. For example, both experimental work on aptitude-treatment interactions (Tobias, 1976) and classroom process-product correlational studies (Brophy & Evertson, 1976; Ebmeier & Good, 1979) indicate that low achievers seem to require, and to learn relatively more when provided with, more structured and redundant instruction in basic concepts and skills. Thus, even though this approach to instruction means that they will be exposed to less content than high achievers will, low achievers will nevertheless retain more content when taught with this approach which is effective with them than they would retain if taught with approaches more effective for high achievers. Similarly, within a given grade level,

slower readers may profit more from frequent teacher interruptions to cue them to graphemic features of words and work on their word attack skills than they would from being allowed more opportunity to notice and correct their own errors or to intuit words from context cues.

Given that research on effective teaching complicates the interpretation of even seemingly obvious relationships between the amount of content to which students are exposed and the amount that they retain, it will not be surprising that interpretation becomes even murkier when attention is shifted to teacher behaviors believed to mediate self-fulfilling prophecy effects through indirect effects on student attitudes, beliefs, and expectations. Teacher praise, for example, is often treated as if it were an important determinant of student learning, but reviews of teacher effectiveness research (Brophy, 1979; Good, 1979) indicate that it usually does not even correlate significantly with learning outcomes, and that when it does, it sometimes correlates negatively. The same is true of the cognitive level of questions that teachers ask students.

Ultimately, teacher effectiveness research will have to make a great deal more progress in developing a knowledge base about linkages between teacher behavior and student learning before teacher expectation researchers will be able to interpret differential patterns of teacher-student interaction unambiguously. In the meantime, it behooves us all to avoid jumping to the conclusion that all observed differences in patterns of interaction with high- versus low-expectation students are undesirable differences, and to recognize that many teachers not only are not biased against low expectation students but are systematically compensating for

the problematic behavior of these students and maximizing their achievement through appropriately individualized instruction.

The Role of Individual Differences in Teachers

Brophy and Good (1974) noted that, although their studies on teacher expectations had produced varied outcomes, each contained some individual teachers who conformed to predictions based on the self-fulfilling prophecy hypothesis, and some who did not. They concluded that *susceptibility to teacher expectation effects is itself an individual difference variable in teachers,* and speculated that it may be associated with general intelligence, role definition (degree to which the teacher assumes personal responsibility for student learning) and various coping and defense mechanisms.

Based on hypothesized teacher responses to students' prior records and present behavior, Brophy and Good characterized teachers as proactive, reactive, or overreactive. Proactive teachers are guided by their own beliefs about what is reasonable or appropriate in setting goals for the class as a whole and for individual students. If they are experienced and perceptive enough to set realistic goals, and skilled enough to overcome frustrations or obstacles, they are likely to move students systematically toward fulfilling the expectations associated with these goals. This would have variable outcomes depending on the teachers' beliefs about teaching and learning (see below), but in any case it is these proactive teachers who are most likely to have positive expectation effects on their students, especially low achievers.

At the other extreme are overreactive teachers who develop rigid,

stereotyped perceptions of their students based on their prior records or on first impressions of their behavior early in the year. This leads to goal setting and interactions in which the students are treated as stereotypes rather than individuals, and is almost certain to lead to undesirable expectation effects on low achievers. Effects on high achievers would vary, depending on teachers' beliefs about teaching and learning (see below) and their skills in instructing those students for whom they have high expectations.

Brophy and Good (1974) hypothesized that most teachers are reactive, neither consistently striving to mold students to conform to expectations that they (the teachers) project on them, nor consistently treating the students as if they were exaggerated stereotypes of their own previous records. Instead, reactive teachers hold their expectations more lightly, adjusting them to take note of new feedback and emerging trends. Because of the flexibility of their expectations, these reactive teachers will have few if any self-fulfilling prophecy effects on their students (in fact, in their classrooms, linkages between teacher expectations and student behavior will represent student effects on teacher expectations, and not vice versa). For the most part, reactive teachers will merely maintain existing differences between high and low achieving students (c.f. Cooper, 1979), although these differences will increase to some minor degree because of differential activities of the students themselves for which the teachers do not compensate.

Much of the research on teacher expectations done in the last ten years supports and elaborates on Brophy and Good's speculations about teacher individual differences. First, it has become clear that

differential treatment of high- versus low-expectation students can be predicted in advance. Smith and Luginbuhl (1976), working with psychology students acting as teachers of other students described to them as either bright or dull, responded differentially depending on whether or not they had been alerted to the possibility of expectation effects. Subjects who had not been so alerted directed more qualitative feedback to the "bright" students (suggesting a self-fulfilling prophecy effect), but subjects who were made aware of expectation effects directed more qualitative feedback to the "dull" students (suggesting an attempt to compensate for student differences). This suggests that simply making teachers more aware of expectation effects may induce them to assume more responsibility for the achievement of low expectation students in their classrooms.

Babad et al. (in press) studied the instructional behaviors and effects of "high bias" and "no bias" physical education student teachers. Bias classifications were based on responses to an earlier task involving grading drawings allegedly made by students from families of contrasting social status background. The "no bias" student teachers were not influenced by social status information in grading the drawings, but the "high bias" student teachers assigned notably higher scores to the drawings allegedly produced by high status students. These student teachers were then observed conducting physical education classes with pupils whom they had previously rated for degree of physical skill.

Most measures of teacher-student interaction and student performance from this study showed both a main effect for teacher expectations and an interaction between teacher expectations and teacher bias classification. That is, although the high expectation students generally

shared more favorable interactions with their teachers and achieved higher scores on performance measures than the low expectation students did, these differences were much more exaggerated in the classes of the "high bias" student teachers than in the classes of the "no bias" student teachers. The "no bias" student teachers apparently made accurate predictions about differential student performance and were differentially affected to some degree by differential student behavior during the classes, but unlike the "high bias" student teachers, they did not exaggerate these existing student differences through self-fulfilling prophecy effects of expectations mediated through preferential treatment.

Brattesani et al. (Note 3) report similar findings for inservice classroom teachers differentiated according to their students' perceptions. "High differentiation" teachers are perceived by their students as communicating higher expectations and allowing more opportunities to participate and more choice of tasks to high achievers, while being more directive, restrictive, and negative in their treatment of low achievers. "Low differentiation" teachers were not perceived by their students to treat high and low achieving students so differently. The possibility of self-fulfilling prophecy effects on student achievement in these classrooms was investigated by examining the relationship between teacher expectations (teacher rankings of students on expected performance, collected earlier in the year) and measures of student achievement at the end of the year adjusted for student achievement at the end of the prior year. These analyses indicated that teacher expectations added only about 3% to the variance in year-end achievement accounted for by prior achievement in the classes of the "low differentiating" teachers,

but added about 15% in the classes of the "high differentiating" teachers. Again, we see that self-fulfilling prophecy effects are minimal in some classes but substantial in others

It is clear at this point that *the nature and degree of teacher expectation effects likely to be observed in a particular classroom will vary with the teacher's personal characteristics and beliefs about teaching and learning*. We are only beginning to understand what some of these important characteristics and beliefs are, and how they interact to produce predictable outcomes.

Teachers' Personal Characteristics

Among teacher characteristics likely to affect the nature of expectation effects observable in a classroom, the following have already been mentioned: (1) the teacher's role definition (degree to which the teacher is willing to assume personal responsibility for student learning; (2) the rigidity versus flexibility of teacher expectations; and (3) the degree to which expectations about individual students are salient and taken into account in planning and delivering instruction (versus held lightly and adjusted in response to current student behavior). Other potential candidates include general intelligence, cognitive complexity, locus of control, sense of efficacy, causal attribution patterns, cognitive style, tolerance for ambiguity, and various coping and defense mechanisms. To date there has not been much research conducted on the role of these personal characteristics in mediating teacher expectation effects, and like other research involving measurement of personal characteristics, much of what there is is difficult to interpret.

Babad et al. (in press) found no differences between

"high bias" and "no bias" student teachers on a variety of self report measures: educational ideology, dogmatism, political views, defensiveness, locus of control, extroversion, impulsiveness, or performance on an embedded figures test. At first, this seems to rule out most cognitive style and personality variables. Furthermore, the "high bias" subjects described themselves as *more* rational, objective, and reasonable, and as *less* emotionally extreme than the "no bias" subjects. However, qualitative analysis of the self report data indicated that the "high bias" subjects gave more extreme responses and showed frequent indicators of conventionalism, rigidity, and intolerance of ambiguity, all of which are interpreted as aspects of authoritarianism or dogmatism. Furthermore, the "high bias" teachers wrote more dogmatic statements and showed more concern about authority and failure issues in responding to hypothetical classroom events, and were described by observers and supervisors as more autocratic, rigid, distant, impulsive, and preferential, and as less trusting, in their classroom behavior. In summary, then, few differences between "high bias" and "no bias" student teachers were picked up by heavily structured and objectively scored personality inventories and self report measures, but many such differences were revealed in open-ended interviews and classroom observations.

It is worth noting not only that it was the "high bias" student teachers who produced most of the self-fulfilling prophecy effects found in the study by Babad et al. (in press), but that most of these were what the authors call "Golem" effects (undesirable, negative effects indicating that low expectations retarded achievement) rather than "Galatea" effects (desirable, positive effects

indicating that high expectations enhanced achievement). Furthermore, the data on classroom observations from this study suggest, at least implicitly, that the exaggeration of student differences seen in the classrooms of the "high bias" student teachers was due more to mediocre instruction of high achievers and poor or inappropriate instruction of low achievers than to optimal instruction of high achievers and mediocre instruction of low achievers. Similar conclusions can be drawn from the data on "high differentiators" and "low differentiators" studied by Brattesani, et al. (Note 3), from Palardy's (1969) study of teachers who did or did not expect sex differences in reading achievement, from Seaver's (1973) study of the fate of younger siblings whose older siblings had been taught by the same teacher, and, indeed, from most of the research reviewed Brophy and Good (1974) and Persell (1977). *In practice, then, it appears that most expectation effects observed in classrooms are Golem effects rather than the Galatea effects produced in Rosenthal and Jacobson's (1968) original experiment, and are produced by teachers variously labeled as "overreactive" (Brophy & Good, 1974), "dogmatic" or "high bias" (Babad et al., in press), or "high differentiating" (Brattesani, et al., Note 3).*

Cooper (1979) has hypothesized that teachers' potential for expectation effects will depend in part on their needs for control (more specifically, their fear of loss of control) when interacting with their students . He reviews research indicating that teachers perceive themselves as more able to predict and control student behavior: (1) when dealing with high expectation students rather than low expectation students, (2) when interacting in private rather than in public, and (3) when they (the teachers) initiate the interaction rather than the student. To the

extent that teachers fear loss of control, they will be especially anxious to avoid public interactions with low expectation students, and most especially public interactions that these students initiate themselves. If so, they are likely to inhibit initiations of interaction by these students in public settings, and instead, to seek these students out in private settings. In public settings, such teachers may call on low expectation students less often, ignore or refuse their attempts to initiate questions or comments, and in general treat them with less warmth and encouragement. They may even withhold praise for accomplishments and at the same time be hypercritical of misconduct or failure.

Consistent behavior of this kind should enhance the achievement of high expectation students and (especially) depress that of low expectation students due to differences in opportunity to participate and in the affective climate provided by the teacher. In addition, Cooper (1979) notes an additional, more subtle, mechanism: In public settings, teachers' feedback to high expectation students should be determined almost entirely by the quality of their performance, but their feedback to low expectation students should often be determined instead by desires to terminate interaction with such students or inhibit future initiations by them. To the extent that this occurs, the feedback received by low expectation students will be less consistently contingent upon their performance. Other research reviewed by Cooper suggests that such inconsistent feedback induces tendencies to attribute outcomes to external and uncontrollable factors (Weiner, 1979), which in turn reduce students' sense of personal efficacy, level of achievement motivation, and ultimately, achievement itself. These kinds of self-fulfilling

prophecy effects of teacher expectations might be expected to occur most often in the classrooms of student teachers who are preoccupied with survival issues or inservice teachers who are ineffective classroom managers and must struggle to "keep the lid on." Even in generally well-managed classrooms, these dynamics may show up in teachers' interactions with particular students whom they perceive as disruptive or potentially threatening to their classroom control.

The cognitive style dimension of psychological differentiation or field-dependence versus field-independence (Witkin, Moore, Goodenough, & Cox, 1977) probably mediates expectation effects as well, especially teachers' reactions to information supplied by others (either experimentally or naturalistically). Field-independent individuals tend to prefer their own assessments based on their own analyses of situations, whereas field-dependent individuals tend to be more suggestible or at least open to the influence of others. This should make them more likely to accept information supplied by an experimenter, school records, or other teachers, and several studies have shown that teachers who accept such information are more likely to show predicted expectation effects (Persell, 1977).

Babad et al. (in press) found no difference in performance on an embedded figures test between "high bias" and "no bias" teachers in their study. However, the embedded figures tests are among the more purely cognitive measures of psychological differentiation. Perhaps one of the more personal-social measures (see Witkin et al., 1977) would show relationships to expectation effects. In any case, the more specific variable of trust in one's own judgment has been shown to relate to resistance to external attempts to induce expectations (Wise, 1972).

Teachers' Beliefs About Teaching and Learning

If they are to have self-fulfilling prophecy effects, differential teacher expectations about students must result in differential treatment of those students. Research in the last decade has shown us that linkages between differential expectations and differential treatment of students are not automatic. We cannot confidently predict how teachers will treat students, let alone what the ultimate effects on student achievement may be, even if we do have information about the teachers' expectations. We would also need information about the teachers' personal characteristics and the teachers' beliefs about teaching and learning.

In one of the few studies to address this directly, Swann and Snyder (1980) induced differential theories about pupil ability and its implications for instruction in experimental subjects who were acting as instructors in a teaching situation. Some instructors were told that student ability is developed primarily by factors extrinsic to the student, particularly thorough instruction (extrinsic theory). Others were told that ability emerges spontaneously from the natural development of students' intrinsic capabilities (intrinsic theory). These instructors then worked with students labeled as high or low in ability, under conditions of limited time availability. As predicted, the differential ideas about student ability and instruction induced in the instructors led to differential teaching behavior. Instructors working with the instrinsic theory indicating that ability develops mostly through intrinsic changes within the student concentrated on the low ability students, apparently believing that the high ability students

would succeed without much help from them. In contrast, the instructors working with the extrinsic theory suggesting that ability depends almost entirely on instruction tended to concentrate on the high ability students, apparently because they were confident that these students could be taught to criterion within the limited time, but were less confident about success with the students labeled as low in ability. Although this was a brief experiment using undergraduate psychology students as instructors, it illustrates the relevance of such factors as teachers' assessments of what can be accomplished with their students during the available time, and of teachers' beliefs about teaching and learning.

Although there has been little attention to the role of teachers' beliefs about teaching and learning in naturalistic research on teacher expectations, both this literature and the literature on teacher effectiveness suggest several mediating mechanisms. One of these involves teachers' role definitions (Good & Brophy, 1978, 1980) or beliefs about what constitute the central functions of the teacher role and about how these functions should be accomplished. Many teachers, especially at the secondary level, consider themselves to be subject matter specialists and believe that instruction in their subject matter is their primary teaching function. Other teachers, especially at the elementary level, place as much or more emphasis on their roles as socializers attempting to promote their students' general mental health or personal adjustment, in addition to teaching them content. The subject matter specialists can be expected to organize most of their interactions with students around the teaching and learning of content, and thus to run businesslike, academically oriented classrooms

featuring briskly paced lessons and activities. Most of their affect and reinforcement is likely to be directed to high achievers, especially those who participate often and communicate both comprehension and enjoyment of the content. Low achievers may be slighted and low participators ignored in these classrooms where the teachers are oriented mostly toward teaching the content. However, if such teachers should happen to have developed or been taught a mastery learning orientation rather than a more traditional group-paced orientation, they may invest more of their time and effort with the low achievers than the high achievers, with opposite results on the relative achievement progress of these two groups.

Teachers who stress student socialization are likely to get to know their students better as individuals, and to interact with them more often on personal or social matters rather than purely content-related matters. They are likely to move through the curriculum at a slower pace, because they allocate more time to non-academic activities and because even during academic activities they are concerned not only about presenting content but about getting all of the students to participate in and enjoy the activities and about making sure that the low achievers keep up with the group. The class as a whole is likely to show less achievement progress under this type of teacher than a more content-oriented teacher (Brophy, 1979; Good, 1979; Rosenshine & Berliner, 1978), because of less exposure to content and thus less opportunity to learn. Given the content that is presented, the potential for self-fulfilling prophecy effects in the classrooms of these socialization oriented teachers is greatest with the low achievers

on whom they tend to concentrate. To the extent that these teachers see the low achievers as capable of learning (but in need of extra encouragement, attention, and instruction), the low achievers may end up doing better than their previous achievement records would predict. On the other hand, if the teachers see these low achievers as limited in potential due to inherent limitations in ability, they may begin to treat them in ways that are well intended but nevertheless likely to further retard their achievement progress ("encouraging" them through overly effusive, non-contingent, or otherwise inappropriate praise; calling on them only when they are certain to know the answer, in order to "protect" them or avoid "putting them on the spot").

The latter example alludes to another important set of teacher beliefs: Causal attributions for student success or failure. Weiner (1979) and others have shown that teachers' responses to student performance will vary according to the causes to which that performance is attributed. Teachers who attribute student failure to their own failure to explain the material adequately are likely to repeat their explanation or try to accomplish their objectives in another way, but teachers who attribute student failure to inherent limitations in student ability are likely to conclude that this particular student cannot learn this particular material, and thus to give up further attempts at instruction. Related concepts such as sense of efficacy (possession of sufficient teacher skill to insure success in achieving instructional objectives) and locus of control (over the outcomes of instructional interactions with students) also suggest predictable differences in teacher persistence versus giving up.

Interactions Among Teachers' Personal Characteristics, Beliefs, Attitudes, and Expectations

Various combinations of personal characteristics, beliefs, and attitudes interact with teachers' expectations in determining teachers' reactions to those expectations. We are a long way from being able to predict such reactions with confidence, but we can at least identify some of the complications that these factors introduce. We noted above, for example, that some teachers feel much more sense of responsibility than others to "do something" about their low achievers, but that these teachers will differ in what they see as appropriate and thus in what their ultimate effects on their low achievers will be.

Some teachers seem to redouble their efforts with low achievers, arranging to monitor and interact with them more often (Brophy, et al., 198I; Brophy & Good, 1974; Rejeski et al., 1979) and to work with them in smaller reading groups (Weinstein, 1976). In effect, this involves adopting a mastery learning approach, and should be beneficial to the low achievers if the extra attention and instruction is appropriate to their needs.

Teacher praise and criticism are involved in many of the unusual patterns of differential teacher interaction with high or low expectation students that have been reported in literature. For example, although classroom studies usually show that high expectation students receive more praise and less criticism than low expectation students, two experimental studies found that high expectation students received both more reinforcement for success and *more* punishment for failure. Presumably these high expectation students were seen as more salient or as more relevant as objects of teaching effort than the low

expectation students were. In any case, to the extent that teachers' beliefs about effective instruction include demanding the most from students and criticizing them for failure to deliver maximal effort, high expectation students might receive more criticism as well as more praise.

Several studies suggest that, even in classrooms where high achievers get more praise than low achievers because they succeed more often, teachers make the most of opportunities that low achievers present to them. Thus, even though high achievers get more praise because they succeed more often, low achievers may get more (or more lengthy or intensive) praise on those occasions when they do respond correctly (Rejeski et al., 1979; Taylor, 1979; Weinstein, 1976; Jeter & Davis, Note 6). Similarly, two studies revealed that, although teachers were more likely to repeat or rephrase questions in an attempt to improve the responses of high achievers when they had failed to respond or responded incorrectly, they were more likely to prolong the response opportunity by asking follow up questions of low achievers when they had answered the first question correctly (Good, Sikes, & Brophy, 1973; Evertson et al., Note 15).

Given that most teachers see low achievers as needing more encouragement and approval than high achievers (Good & Dembo, 1973; Hersh, 1971; Rothbart, Dalfen, & Barrett, 1971), it may seem surprising that such "strike while the iron is hot" phenomena are not observed more frequently. Cooper (1979) provides on explanation with his suggestion that teachers may be unresponsive or even hypercritical toward low expectation students in public situations as a way to inhibit

their initiation rates. Other (not mutually exclusive) possibilities are that unexpected successful performance by low achievers may not be noticed as regularly (because expectations tend to structure both people's distribution of attention to competing stimuli and their interpretation of events that they do attend to); that teachers are often temporarily confused by unexpected success (simply because it is unexpected) or are suspicious of it (maybe it stems from copying or cheating); that unexpected events are somehow troubling even when desirable (because we tend to become well adjusted to and eventually to prefer what we have come to expect); or that unexpected success is actually threatening to teachers (especially teachers who have given up on particular students and rationalized this decision by concluding that the students lack ability). Whatever the dynamics, several studies have indicated that teachers sometimes not only fail to take advantage of opportunities to reinforce unexpected success by low expectation students, but react negatively to it (Leacock, 1969; Rosenthal & Jacobson, 1968; Rubovits & Maehr, 1971; Shore, 1969; Spector, Note 12). Thus, under some circumstances, teacher response to student behavior will depend not so much on whether the behavior is objectively desirable, but on whether it agrees with or violates the teacher's expectations.

The Role of Individual Differences in Students

Although they have not received as much attention as individual differences in teachers, individual differences in students have also been recognized as mediating the effects of teacher expectations. Rosenthal and his colleagues, for example, have shown that individuals

differ both in their encoding and communication of expectations and in their decoding of the expectations communicated by others. Students who are more sensitive to voice tone or other subtle communication cues may decode teachers' communications of expectations more often and accurately than other students, and thus may at least potentially be more affected by them (Conn, Edwards, Rosenthal, & Crowne, 1968; Zuckerman, DeFrank, Hall, & Rosenthal, 1978).

Brophy and Good noted in their original model (Brophy & Good, 1970b) that students might resist stereotypic treatment from teachers, and they speculated about other possible student mediation mechanisms in their later review (Brophy & Good, 1974). For example, they noted that some students are much more active, initiatory, and generally salient in the classroom than others, and that these high salient students are more likely to be perceived accurately by their teachers (although not necessarily to be perceived more positively). The less salient students make it easier for teachers to sustain inappropriate expectations concerning them, because they give the teachers less frequent and striking evidence about what they are like. Furthermore, the more active and salient students are likely to condition the teacher to respond to them in particular ways, while the less salient students are more likely to be conditioned by the teacher.

Brophy and Good also noted that students who try their best (or at least give the impression that they do) are likely to be seen as working up to their capacity, whereas students who give up easily, copy from neighbors, or show little interest in the work are likely to be perceived as underachievers who could do better if their motivation were improved.

The latter students should be more open to improvement through communication of positive teacher expectations (at least in theory; in practice, teachers often resent or are threatened by such student behavior and respond poorly to it).

Johnson (1970) extrapolating from laboratory research, suggests that students who are dependent, adult-oriented, and generally "other directed" should be more susceptible to expectation effects than other students. This hypothesis is supported by the findings of Asbury (1970) on student locus of control as a mediator of teacher expectation effects. Asbury found no difference between internal and external locus of control students in response to teacher communications of positive expectations, but found that students with an external locus of conrol were more affected by communications of negative expectation than students with an internal locus of control were.

Other work (reviewed in Persell, 1977) suggests that susceptibility to teacher expectation effects will vary with student age, race, or social class. In particular, it seems likely that younger students or students who are heavily dependent upon the teacher for information (c.f. West & Anderson, 1976) are more likely to be affected by teacher expectations than other students who may have more information or experience available to draw upon in forming their own opinions.

Student characteristics that influence the quality of teacher-student relationships will also affect teacher expectation effects. After all, teacher expectations for student achievement do not exist in isolation but interact with the personal and social aspects of teacher-student interaction and the attitudes that this interaction generates.(Brophy et al., 1981; Willis & Brophy, 1974). Persistent disruptive misconduct,

for example, threatens teachers' control needs (Cooper, 1979) and tends to structure teacher-student interaction around issues of conduct rather than achievement, so that disruptive students are likely to get less academic encouragement than more compliant students with similar achievement profiles get.

Even more important than the general frequency of disruptive misbehavior is the specific personal relationship between the teacher and the individual student. Brophy et al. (1981) found that teachers had frequent and generally neutral to positive contacts with certain students who misbehaved frequently because the misbehavior was not intended nor taken personally and because the teachers and students apparently liked one another. In contrast, the teachers had very negative relationships with other students, including some that did not misbehave very often or intensively. The key to these negative relationships was mutual dislike. On the part of the students, this dislike showed itself in general avoidance of the teacher, lack of responsiveness when teachers attempted to encourage or reinforce, and a sullen or defiant attitude when the teachers attempted to criticize or discipline. On the part of the teachers, negative relationships with students were marked not only by low rates of teacher initiation of public interactions with these students but by high rates of criticism, tendency to hold up these students as bad examples to the rest of the class, refusals of initiations and requests from these students, and frequent non-verbal communication of impatience or negative affect. In short, these students and teachers were mutually hostile to one another. Under these conditions, the potential for positive self-fulfilling prophecy effects of

teacher expectations (Galatea effects) seems minimal, but the probability of negative self-fulfilling prophecy effects (Golem effects) seems highly likely.

A final set of variables worth mentioning here are student motivational and attributional patterns that will interact with differential patterns of teacher treatment to determine ultimate outcomes on student achievement. The effort and output of some students is increased by praise and decreased by criticism, but other students show the opposite pattern. Thus, similar teacher expectations leading to similar treatment of students (in this case, praise for success) may augment achievement and ultimately contribute to significant self-fulfilling prophecy effects with some students, but not others. Similarly, teacher praise may augment achievement in students who attribute their success at least in part to their own efforts, but not in students who attribute success purely to ability or to uncontrollable external factors such as luck.

Conceptualizing Self-fulfilling Prophecy Effects in the Classroom

At this point it should be clear that teacher expectation effects on students are much more complex and difficult to conceptualize, let alone predict, than the models offered by Brophy and Good (1970 b Rosenthal (1974), and others would suggest. A more complex model has recently been offered by Darley and Fazio (1980) for conceptualizing expectation effects in general social interaction. Paraphrased to refer specifically to teacher expectation effects on students, the model is as follows:

1. The teacher develops a set of expectations about the student (based on the student's status characteristics, information about past behavior or accomplishments, and observations of present behavior or accomplishments).

2. These expectations influence the teacher's interactions with the student.

3. The student interprets the teacher's actions. To the extent that these actions are seen as responsive to factors specific to the student (rather than being attributed to the teacher's general predispositions or typical responses to situations that the student happened to be in), the student will come to expect similar treatment from the teacher in the the future.

4. The student will respond to the teacher's behavior, as he or she interprets this behavior. Usually the student's behavior will bear some reciprocal relationship to the teacher's actions, so as to confirm the teacher's expectations. This is especially likely if the expectations implied by the teacher's behavior are congruent with the student's self image or at least are acceptable to the student. Where this is not the case, the student may respond in ways that disconfirm the teacher's expectations.

5. The teacher interprets the student's response. Most people are biased toward maintaining their expectations once they have been formed, so that student responses that confirm expectations are likely to be attributed to the dispositional qualities of the student and thus taken as confirmation of expectations, whereas disconfirming responses are likely to be attributed to situational factors and thus not necessarily taken as evidence that expectations are incorrect. Repeated and salient disconfirmation may be necessary to change an entrenched expectation.

6. Finally, the student interprets his or her own response to the the teacher. One frequent interpretation will be that the response is self-revealing, that it gives the student more information about what he or she is like. To the extent that the student has understood the teacher's expectation or responded with behavior that confirms that expectation, the student's self image may change in the direction implied by the teacher's expectation.

Darley and Fazio's model is an improvement over earlier models because it includes more explicit attention to causal attributions and other information-processing mechanisms that become involved when teachers and students interpret the meanings of each other's behavior. It

also helps to conceptualize some of the complications that can arise. For example, some students will be aware of and strongly responsive to a particular combination of teacher expectations and behaviors, and thus will come to conform to those expectations. Other students may be less attentive or socially perceptive, so that they will not be as aware of the expectations that their teachers are communicating, and thus will not be as strongly affected by them. Still other students will become aware of these expectations but respond by actively resisting them. They may even succeed in changing the teacher's expectations, but even if they do not, their resistance will minimize the degree to which the expectations become self-fulfilling.

Even this model, however, makes no provision for several other factors known to mediate teacher expectation effects on students. The model works well for relatively simple expectations such as whether or not a student is likely to respond positively to a friendly teacher initiative, but it does not address many of the complexities involved in the linkages between teacher expectations, teacher beliefs about student needs, objectives that the teacher formulates based on those beliefs, behaviors intended to meet those objectives, and the actual effects of these behaviors on the student. The possibility of slippage between any one of these steps and the next makes predictions risky.

For example, a teacher may have high expectations and thus set lofty objectives for a particular student, and yet fail to see these expectations fulfilled for lack of knowledge or misinformation about effective teaching. Thus, even a proactive approach to individualizing interactions with students will not necessarily be successful (as the frequency of well-intended but misdirected attempts to "encourage" low

achievers will attest). Or, a teacher may formulate firm expectations about differential student achievement but do very little to generate self-fulfilling prophecy effects because he or she relies on whole class instructional methods that minimize dyadic interaction with individual students and thus limit opportunities to communicate differential expectations. Or, the teacher may be extremely impressed with the potential of certain students but believe that these students will make the most progress if allowed to work independently, with the result that the students achieve less than they might have achieved with more input and guidance from the teacher. As a final example, consider the teacher who is convinced that a particular subgroup of students has such low potential that they will be fortunate to make even minimally acceptable progress even with extra attention and help, and who responds to this expectation by arranging to provide this group with as much extra attention and help as possible. Despite the original motivating expectation, the extra attention and help afforded these students is likely to cause them to achieve much more than they would have otherwise, and very possibly to achieve more than some of their classmates who began at achievement levels below average but not low enough to cause the teacher to place them into this special group. In this example, the teacher's original low expectations lead to behavior that produces disconfirming rather than self-fulfilling prophecy effects.

In summary, a comprehensive conceptualization of self-fulfilling prophecy effects of teachers' expectations for student achievement in ordinary classroom settings requires attention not only to teacher behavior related directly to the communication of expectations to students, but to teacher beliefs about appropriate curriculum, effective instruc-

tion, and student motivation, to the quality of the personal relationship between the teacher and the student, and to a variety of teacher and student individual difference variables. Clearly, the topic of self-fulfilling prophecies in the classroom is much more complex than it seemed to be 10 years ago.

Research Implications

There seems to be no need for further replications of the Rosenthal and Jacobson (1968) Oak School experiment or similar studies designed solely to prove that teacher expectations can have self-fulfilling prophecy effects on student achievement. This has already been demonstrated. Similarly, there is no need for further demonstrations that experimental subjects asked to make predictions or otherwise express expectations about the achievement of hypothetical students, using a restricted set of information provided by the experimenter, can be influenced by information about prior achievement or about physical appearance, sex, race, social class, or various other status characteristics. Such studies add nothing to social psychological theory, nor do they tell us anything about how inservice teachers develop and respond to expectations about the achievement of their own students.

There is a need for more information on the latter point. In particular, information is needed about the formation of normative expectations for students in general. Who decides what content is appropriate for students at each grade level to master, and on what basis? Given these decisions and the curriculum development they lead to, who selects among available published curriculum packages those that appear most appropriate for students in a particular school or classroom, and on what

basis? The research of Pidgeon (1970) suggests that expectations operating at this general level of curriculum preparation and selection may have much more profound consequences on student achievement than individual teachers' differential expectations for different students in their classes, and yet the development and functioning of expectations at this level have not received much attention in the expectation literature. Aspects of the topic have received attention in recent research conducted at the Institute for Research on Teaching at Michigan State University (Schwille, Porter, Gant, Belli, Floden, Freeman, Knappen, Kuhs & Schmidt, Note 19), although more from an interest in the social and political organization of schooling than from an interest in the expectations of school administrators and teachers.

There is also need for more information about the development and functioning of individual inservice teachers' expectations about their students over the course of the school year (c.f. Good, 1980). Willis (Note 4) and others have shown that, when asked directly for differential expectations about individual students, teachers are able to express such expectations in some detail, and the expectations tend to be generally accurate, to be based on the most reliable and valid information available, and to be corrected by new information as it becomes available. Yet, the fact that teachers can produce these differential expectations and related rationales upon specific demand does not mean that they necessarily draw upon this information in planning and delivering instruction. Research on teacher planning (reviewed by Clark & Yinger, Note 20) suggests that teachers concentrate mostly on understanding the procedures called for by any particular academic task--on making sure that they have mastered these procedures and are prepared

to implement them. There is relatively little attention to the objectives of activities or their appropriateness to the class, although teachers do make judgments about whether the class is likely to "respond" to the activity and sometimes eliminate or substitute for parts of the activity that they do not believe will be appropriate. However, these judgments tend to be based more on the potential management difficulties that the activity will present or the degree to which the students are likely to enjoy and participate willingly in the activity, rather than the degree to which the difficulty level and academic content of the activity fits the students' current achievement progress. Teachers' expectations clearly are involved in these judgments, but they are expectations concerning the class or group as a whole rather than differential expectations for individual students, and they are expectations concerning student responsiveness to tasks rather than student achievement needs or potential.

Research on teachers' perceptions and decision making during actual interaction with their students suggests similar conclusions (Shavelson & Stern, 1981; Brophy, Note 21). Most thoughts are about the flow of instruction of the activity itself, and most expectations concern anticipated student responses to the activity. Again, these expectations concern the group as a whole or perhaps a steering group (Lundgren, 1972) within it, rather than the responses of specific individuals. To the extent that individuals are considered, the teacher's focus tends to be more on their attentiveness and degree of participation in the activity than on their immediate learning needs or their more general personal or status characteristics. Thus, existing research on teachers' preactive planning and interactive decision making reveal little spontaneous

mention of expectations for student achievement or differential expectations for individuals within the class or group, although they do reveal decision making based on expectations about how the group will respond to activities and, occasionally, about how individual students are likely to respond or how they appear to be responding at the moment. It is worth noting, however, that these lines of research are very new, and have not yet been adopted by researchers specifically interested in teacher expectations. Thus, a great deal of information about the role teacher expectations in planning and delivering instruction might be revealed by researchers who specifically looked for it.

Another point worthy of development is that to date, research on teacher expectations has focused almost entirely on expectations for student achievement. Yet, the research on teacher planning and interactive decision making suggeststhat teacher expectations about students' affective responses to academic tasks may be more centrally related to what goes on in the classroom, and thus ultimately to student achievement, as well. Furthermore, Good and Brophy (1978, 1980) have pointed out that the success of teachers' classroom management efforts is probably determined in part by the kinds of expectations that teachers communicate concerning student conduct; that the interpersonal atmosphere in the classroom probably depends in part on the kinds of expectations the teachers communicate about student cooperation and interpersonal relationships; and that student responsiveness to lessons and assignments probably depends in part on the kinds of expectations that teachers communicate about the meaningfulness, interest value, or practical value of those lessons or assignments. In short, teachers routinely model and communicate expectations about a variety of matters in addition to

student achievement. Much of this activity will have direct or indirect effects on achievement, however, and in addition can be expected to affect students' attitudes, beliefs, attributions, expectations, achievement motivation, and classroom conduct. Yet, expectation effects of this kind have received little attention to date.

Returning to achievement expectations, Good (1981) has noted that most of the research so far has concentrated on teachers' public interactions with students during classroom recitations and discussion. More attention is needed to other contexts and mechanisms for communicating expectations: Differential assignments made to different students (and the rationales given when making those assignments), individualized comments written on returned assignments or included along with grades on report cards, and so on.

More information is also needed on student mediation of teacher expectations. Work by Weinstein and her colleagues (Weinstein & Middlestadt, 1979; Weinstein, Marshall, Brattesani, & Middlestadt, in press) has shown that students are aware of differential teacher treatment of high versus low achievers (although I believe that they exaggerate the strength and consistency of these differences). What students conclude from these perceptions will differ with the student, however. For example, Meyer, Bachmann, Biermann, Hempelmann, Ploger, & Spiller (1979) report that younger elementary students may take inappropriately lavish teacher praise at face value and thus feel reinforced by it, but that older students are likely to recognize the incongruence of such praise and to be embarrassed by it because it implies that the teacher does not think that they are very bright.

Covington and Omelich (1979) have shown that teachers probably should not overstress effort relative to ability when praising students for success, because students want to be thought of as intelligent and not merely as hard working. Winne and Marx (in press) have shown that there is often an important difference between the content that teachers thought they were communicating to their students and the content that the students received, and Anderson (1981) has shown similar slippage between the purpose and intended outcomes of seatwork assignments and their actual effects on students. Much more information is needed about how and why the messages that teachers intend to communicate are often missed or distorted by their students, and about how these phenomena affect expectation effects in the classroom.

Finally, we clearly need some programmatic hypothesis generation and testing about whether and how teachers can communicate positive expectations effectively and thus have positive (Galatea) self-fulfilling prophecy effects on their students. In theory, consistent projection of positive expectations in the process of instructing students should produce more positive outcomes than more neutral but otherwise comparable instruction. We cannot be sure that this is true in practice, however. First, it may be that expectations have non-trivial self-fulfilling prophecy effects only over the short term or in new situations. Perhaps the potential for such effects is not great enough to bother with in situations where the same teacher is working with the same students across a term or school year.

Second, this approach to improving student achievement may be too complex to be cost effective. Recall that self-fulfilling prophecy effects require consistent projection of somewhat *inaccurate* expectations

to students. In this case, we are talking about teachers consistently treating students as if they were somewhat brighter or higher achieving than they actually are. This may be difficult or even impossible to do consistently, because we are accustomed to responding to our real expectations, and not to acting as if we actually had somewhat more optimistic expectations than we do. Furthermore, even if the enterprise proved feasible, expectations would have to be continuously adjusted (individually for each student) to keep them within a narrow range of tolerance along a very fine line: They would have to be slightly more optimistic than the real expectations, but not so much so as to undermine the teacher's credibility.

Third, even if this approach should ultimately prove feasible and cost effective, we need much more information about how teachers can communicate positive expectations in ways that will have the desired effects on students. As the complications reviewed in this paper indicate, we are a long way from having an organized body of such knowledge at the moment.

Teaching Implications

Highly prescriptive teaching implications will have to await completion of the research outlined above. In the meantime, the literature on expectations does afford some suggestions to teachers. First, it is not appropriate to attempt to deny important individual differences by trying to maintain very high expectations for all students. Unrealistically high expectations for students will lead to inappropriate instruction and ultimately depress rather than enhance achievement. Nor is it appropriate to try to maintain equal expectations for

all students, or to treat all students the same way. Optimal instruction for all students implies some degree of individualization for each particular student, and also implies that treatment of low achievers will differ systematically in some ways from treatment of high achievers. A teacher's instruction of low achievers should be judged on the degree to which it meets their needs and maximizes their achievement progress, and not on its degree of similarity to the teacher's treatment of higher achievers.

This implies, of course, that teachers' expectations and instruction of all students, but perhaps most especially low achievers, should be adjusted to take into account emerging developments. To the extent that teachers begin with appropriate expectations and instruction that are well suited to particular students' needs and thus successful in helping them make rapid progress, this progress itself will propel the students toward new stages in content mastery or skill development, which will imply different, higher level needs and associated instructional strategies. Thus, the low reading group may presently need content and instruction that is more basic or structured than what the middle reading group presently needs, but as the low group makes progress, their reading group activities should become more and more like those presently used with the middle group.

More generally, teachers can expect to minimize negative (Golem) expectation effects, and perhaps maximize positive (Galatea) expectation effects, if they:

1. Concentrate on how to teach (and where necessary, reteach) the content to the class or group as a whole, rather than worry too much about individual differences.

2. Keep expectations for individuals current by monitoring their progress closely; stress present performance over past history.

3. Set goals for the group and for individuals in terms of floors (minimally acceptable standards), not ceilings; let group progress rates, rather than limits adopted arbitrarily in advance, determine how far the group can go within the time available.

4. In individualizing instruction and giving students feedback about performance, stress continuous progress relative to previous levels of mastery rather than normative comparisons or comparisons between individuals. In planning and delivering instruction, concentrate on students' present levels of understanding and mastery and their implications for present instructional needs, rather than on who the students are individually and how they are doing relative to one another.

5. In giving students feedback, stress the provision of informative information, and not merely evaluation of success or failure.

6. When students have not understood an explanation or demonstration, think in terms of diagnosing their learning difficulty and following through by breaking down the task or reteaching it in a different way, rather than merely repeating the same instruction or giving up in frustration.

7. In general, think in terms of stretching the students' minds by stimulating them and encouraging them to achieve as much as they can, and not in terms of "protecting" them from failure or embarrassment.

These guidelines are easy enough to communicate to teachers, but may prove difficult for them to implement because the continuing cognitive demands built into the teaching role make it difficult for teachers to monitor their own behavior. Both preservice and inservice teachers will need help from others if they are to become more aware of instructional practices they have adopted habitually without much if any conscious decision making, and more aware of differential expectations they communicate to students through differential treatment. Good and Brophy

(1978) provide suggestions about how teachers can arrange to get feedback from their students or from their colleagues, supervisors, or school administrators. In addition, the Teacher Expectations and Student Achievement (TESA) program (Kerman, 1979) is available to teachers looking for a packaged inservice program dealing with communication of teacher expectations and related phenomena.

Reference Notes

1. Williams, T. Students, teachers, and educational expectations: Reciprocal effects at three points in time. Unpublished manuscript, Ontario Institute for Studies in Education, 1972.

2. McDonald, F., & Elias, P. Beginning Teacher Evaluation Study: Phase II Technical Summary, Final Report. Princeton, New Jersey: Educational Testing Service, 1976.

3. Brattesani, K., Weinstein, R., Middlestadt, S., & Marshall, H. Using student perceptions of teacher behavior to predict student outcomes. Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, April, 1981.

4. Willis, S. Formation of teachers' expectations of students' academic performance. Unpublished doctoral dissertation, Department of Educational Psychology, University of Texas at Austin, 1972.

5. Evertson, C. Differences in instructional activities in high and low achieving junior high classes (Report No. 6106). Research and Development Center for Teacher Education, University of Texas at Austin, 1980.

6. Jeter, J., & Davis, O. Elementary school teachers' differential classroom interaction with children as a function of differential expectations of pupil achievements. Paper presented at the annual meeting of the American Educational Research Association, 1973.

7. Amato, J. Effect of pupils' social class upon teachers' expectations and behavior. Paper presented at the annual meeting of the American Psychological Association, 1975.

8. Fernandez, C., Espinosa, R., & Dornbusch, S Factors perpetuating the low academic status of Chicano high school students (Memorandum No. 138). Center for Research and Development in Teaching, Stanford University, 1975.

9. Taylor, D. Second grade reading instruction: The teacher-child dyadic interactions of boys and girls of varying abilities. Unpublished master's thesis, Rutgers, The State University of New Jersey, 1977.

10. Jones, V. The influence of teacher-student introversion, achievement, and similarity on teacher-student dyadic classroom interactions. Unpublished doctoral dissertation, Department of Educational Psychology, University of Texas at Austin, 1971.

11. Medinnus, G., & Unruh, R. Teacher expectations and verbal communication. Paper presented at the annual meeting of the Western Psychological Association, 1971.

12. Spector, P. The communication of expectancies: The interaction of reinforcement and expectancy instructions. Unpublished manuscript, Washington University of St. Louis, 1973.

13. Davis, D., & Levine, G. The behavioral manifestations of teachers' expectations. Unpublished manuscript, Hebrew University of Jerusalem, 1970.

14. Mendoza, S., Good, T., & Brophy, J. Who talks in junior high classclassrooms? (Report No. 68). Research and Development Center for for Teacher Education, University of Texas at Austin, 1972.

15. Evertson, C., Brophy, J., & Good, T. Communication of teacher expectations: Second grade (Report No. 92). Research and Development Center for Teacher Education, University of Texas at Austin, 1973.

16. Cahen, L. An experimental manipulation of the halo effect. Unpublished doctoral dissertation, Stanford University, 1966.

17. Heapy, N., & Siess, T. Behavioral consequences of impression formation: Effects of teachers' impressions upon essay evaluations. Paper presented at the annual meeting of the Eastern Psychological Association, 1970.

18. Cornbleth, C., Davis, O., & Button, C. Teacher-pupil interaction and teacher expectations for pupil achievement in secondary social studies classes. Paper presented at the annual meeting of the American Educational Research Association, 1972.

19. Schwille, J., Porter, A., Gant, M., Belli, G., Floden, R., Freeman, D., Knappen, L., Kuhs, T., & Schmidt, W. Factors influencing teachers' decisions about what to teach: Sociological perspectives (Research Series No. 62). East Lansing, Michigan: Institute for Research on Teaching, Michigan State University, 1979.

20. Clark, C., & Yinger, R. The hidden world of teaching: Implications of research on teacher planning (Research Series No. 77). East Lansing, Michigan: Institute for Research on Teaching, Michigan State University, 1980.

21. Brophy, J. Teachers' cognitive activities and overt behaviors (Occasional Paper No. 39). East Lansing, Michigan: Institute for Research on Teaching, Michigan State University, 1981.

References

Adams, G., & Cohen, A. Children's physical and interpersonal characteristics that affect student-teacher interactions. Journal of Experimental Education, 1974, 43, 1-5.

Allington, R. Teacher interruption behaviors during primary-grade oral reading. Journal of Educational Psychology, 1980, 72, 371-377.

Alpert, J. Teacher behavior across ability groups: A consideration of the mediation of Pygmalion effects. Journal of Educational Psychology, 1974, 66, 348-353.

Anderson, D., & Rosenthal, R. Some effects of interpersonal expectancy and social interaction on institutionalized retarded children. Proceedings of the 76th annual convention of the American Psychological Association, 1968, 3, 479-480.

Anderson, L. Short-term student responses to classroom instruction. Elementary School Journal, 1981, 82, 97-108.

Asbury, D. The effects of teacher expectancy, subject expectancy, and subject sex on the learning performance of elementary school children. Dissertation Abstracts International, 1970, 31, 4537A.

Babad, E., Inbar, J., & Rosenthal, R. Pygmalion, Galatea, and the Golem: Investigations of biased and unbiased teachers. Journal of Educational Psychology, in press.

Beez, W. Influence of biased psychological reports on teacher behavior and pupil performance. Proceedings of the 76th annual convention of the American Psychological Association, 1968, 3, 605-606.

Blakey, M. The relationship between teacher prophecy and teacher verbal behavior and their effect upon adult student achievement. Dissertation Abstracts International, 1970, 31, 4615A.

Borko, H., Cone, R., Russo, N., & Shavelson, R. Teachers' decision making. In P. Peterson and H. Walberg (Eds.), Research on teaching: Concepts, findings, and implications. Berkeley, California: McCutchan, 1979.

Borko, H., Shavelson, R., & Stern, P. Teachers' decisions in the planning of reading instruction. Reading Research Quarterly, 1981, 16, 449-466.

Braun, C. Teacher expectation: Sociopsychological dynamics. Review of Educational Research, 1976, 46, 185-213.

Brookover, W., Beady, C., Flood, P., Schweitzer, J., & Wisenbaker, J. School social systems and student achievement: Schools can make a difference. New York: Bergin, 1979.

Brophy, J. Teacher behavior and its effects. Journal of Educational Psychology, 1979, 71, 733-750.

Brophy, J., & Evertson, C. Learning from teaching: A developmental perspective. Boston: Allyn and Bacon, 1976.

Brophy, J., & Evertson, C. Context variables in teaching. Educational Psychologist, 1978, 12, 310-316.

Brophy, J., & Evertson, C., with Anderson, L., Baum, M., & Crawford, J. Student characteristics and teaching. New York: Longman, 1981.

Brophy, J., & Good, T. Brophy-Good System (teacher-child dyadic interaction). In A. Simon and E. Boyer (Eds.), Mirrors for behavior: An anthology of observation instruments continued, 1970 supplement, Volume A. Philadelphia: Research for Better Schools, Inc., 1970a.

Brophy, J., & Good, T. Teachers' communication of differential expectations for children's classroom performance: Some behavioral data. Journal of Educational Psychology, 1970b, 61, 365-374.

Brophy, J., & Good, T. Teacher-student relationships: Causes and consequences. New York: Holt, Rinehart, and Winston, 1974.

Chaikin, A., Sigler, E., & Derlega, V. Nonverbal mediators of teacher expectation effects. Journal of Personality and Social Psychology, 1974, 30, 144-149.

Clark, K. Dark ghetto. New York: Harper and Row, 1965.

Clark, C., & Yinger, R. Teachers' thinking. In P. Peterson and H. Walberg (Eds.), Research on teaching: Concepts, findings, and implications. Berkeley, California: McCutchan, 1979.

Conn, L., Edwards, C., Rosenthal, R., & Crowne, D. Perception of emotion and response to teachers' expectancy by elementary school children. Psychological Reports, 1968, 22, 27-34.

Cooper, H. Pygmalion grows up: A model for teacher expectation communication and performance influence. Review of Educational Research, 1979, 49, 389-410.

Cooper, H., & Baron, R. Academic expectations and attributed responsibility as predictors of professional teachers' reinforcement behavior. Journal of Educational Psychology, 1977, 69, 409-418.

Cooper, H., & Good, T. Pygmalion grows up: Studies in the expectation communication process. New York: Longman, in press.

Covington, M., & Omelich, C. It's best to be able and virtuous too: Student and teacher evaluative responses to successful effort. Journal of Educational Psychology, 1979, 71, 688-700.

Crano, W., & Mellon, P. Causal influences of teachers' expectations on children's academic performance: A cross-lagged panel analysis. Journal of Educational Psychology, 1978, 79, 39-49.

Darley, J., & Fazio, R. Expectancy confirmation processes arising in the social interaction sequence. American Psychologist, 1980, 35, 867-881.

Dusek, J. Do teachers bias children's learning? Review of Educational Research, 1975, 45, 661-684.

Ebmeier, H., & Good, T. The effects of instructing teachers about good teaching on the mathematics achievement of fourth-grade students. American Educational Research Journal, 1979, 16, 1-16.

Edmonds, R. Effective schools for the urban poor. Educational Leadership, 1979, 37, 15-18.

Finn, J. Expectations and the educational environment. Review of Educational Research, 1972, 42, 387-410.

Firestone, G., & Brody, N. Longitudinal investigation of teacher-student interactions and their relationship to academic performance. Journal of Educational Psychology, 1975, 67, 544-550.

Given, B. Teacher expectancy and pupil performance: The relationship to verbal and non-verbal communication by teachers of learning disabled children. Dissertation Abstracts International, 1974, 35, 1529A.

Good, T. Teacher effectiveness in the elementary school: What we know about it now. Journal of Teacher Education, 1979, 30, 52-64.

Good, T. Classroom expectations: Teacher-pupil interactions. In J. McMillan (Ed.), The social psychology of school learning. New York: Academic Press, 1980.

Good, T., & Brophy, J. Looking in classrooms (2nd ed.). New York: Harper and Row, 1978.

Good, T., & Brophy, J. Educational psychology: A realistic approach (2nd ed.). New York: Holt, Rinehart, and Winston, 1980.

Good, T., Cooper, H., & Blakey, S. Classroom interaction as a function of teacher expectations, student sex, and time of year. Journal of Educational Psychology, 1980, 72, 378-385.

Good, T., & Dembo, M. Teacher expectations: Self report data. School Review, 1973, 81, 247-253.

Good, T., Sikes, J., & Brophy, J. Effects of teacher sex and student sex on classroom interaction. Journal of Educational Psychology, 1973, 65, 74-87.

Haskett, M. An investigation of the relationship between teacher expectancy and pupil achievement in the special education class. Dissertation Abstracts, 1968, 29, 4348A-4349A.

Heathers, G. Grouping. In R. Ebel (Ed.), Encyclopedia of educational research (4th ed.). New York: MacMillan, 1969.

Hersh, J. Effects of referral information on testers. Journal of Consulting and Clinical Psychology, 1971, 37, 116-122.

Humphreys, L., & Stubbs, J. A longitudinal analysis of teacher expectation, student expectation, and student achievement. Journal of Educational Measurement, 1977, 14, 261-270.

Johnson, E. Pygmalion in the testing setting: Nonverbal communication as a mediator of expectancy fulfillment. Dissertation Abstracts International, 1970, 31, 6716A.

Keddie, N. Classroom knowledge. In F. Young (Ed.). Knowledge and control: New directions for the sociology of education. London: Collier-Macmillan, 1971.

Kerman, S. Teacher expectations and student achievement. Phi Delta Kappan, 1979, 60, 716-718.

Kester, S., & Letchworth, J. Communication of teacher expectations and their effects on achievement and attitudes of secondary school students. Journal of Educational Research, 1972, 66, 51-55.

Kleinfeld, J. Effective teachers of Eskimo and Indian Students. School Review, 1975, 83, 301-344.

Kounin, J. Discipline and group management in classrooms. New York: Holt, Rinehart, & Winston, 1970.

Leacock, E. Teaching and learning in city schools. New York: Basic Books, 1969.

Lundgren, U. Frame factors and the teaching process: A contribution to curriculum theory and theory on teaching. Stockholm: Almqvist and Wiksell, 1972.

Martinek, T., & Johnson, S. Teacher expectations: Effects on dyadic interaction and self-concept in elementary-age children. Research Quarterly, 1979, 50, 60-70.

Mason, E. Teachers' observations and expectations of boys and girls as influenced by biased psychological reports and knowledge of the effects of bias. Journal of Educational Psychology, 1973, 65, 238-243.

Meichenbaum, D., Bowers, K., & Ross, R. A behavioral analysis of teacher expectancy effect. Journal of Personality and Social Psychology, 1969, 13, 306-316.

Merton, R. The self-fulfilling prophecy. Antioch Review, 1948, 8, 193-210.

Metz, M. Classrooms and corridors: The crisis of authority in desegregated secondary schools. Berkeley, California: University of California Press, 1978.

Meyer, W., Bachmann, M., Biermann, U., Hempelmann, M., Ploger, F., & Spiller, H. The informational value of evaluative behavior: Influences of praise and blame on perceptions of ability. Journal of Educational Psychology, 1979, 71, 259-268.

Noble, C., & Nolan, J. Effect of student verbal behavior on classroom teacher behavior. Journal of Educational Psychology, 1976, 68, 342-346.

Page, S. Social interaction and experimenter effects in the verbal conditioning experiment. Canadian Journal of Psychology, 1971, 25, 463-475.

Palardy, J. What teachers believe--what children achieve. Elementary School Journal, 1969, 69, 370-374.

Persell, C. Education and inequality: The roots and results of stratification in American schools. New York: The Free Press, 1977.

Pflaum, S., Pascarella, E., Boswick, M., & Auer, C. The influence of pupil behaviors and pupil status factors on teacher behaviors during oral reading lessons. Journal of Educational Research, 1980, 74, 99-105.

Pidgeon, D. Expectation and pupil performance. Slough, Great Britain: National Foundation for Educational Research, 1970.

Rejeski, W., Darracott, C., & Hutslar, S. Pygmalion in youth sport: A field study. Journal of Sports Psychology, 1979, 1, 311-319.

Rist, R. Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. Harvard Educational Review, 1970, 40, 411-451.

Rosenbaum, J. Making inequality. New York: Wiley-Interscience, 1976.

Rosenshine, B., & Berliner, D. Academic engaged time. British Journal of Teacher Education, 1978, 4, 3-16.

Rosenthal, R. On the social psychology of the self-fulfilling prophecy: Further evidence for Pygmalion effects and their mediating mechanisms. New York: MSS Modular Publications, 1974.

Rosenthal, R. Experimenter effects in behavioral research (2nd ed.). New York: Irvington, 1976.

Rosenthal, R., & Jacobson, L. Pygmalion in the classroom: Teacher expectation and pupils' intellectual development. New York: Holt, Rinehart, and Winston, 1968.

Rothbart, M., Dalfen, S., & Barrett, R. Effects of teacher's expectancy on student-teacher interaction. Journal of Educational Psychology, 1971, 62, 49-54.

Rowe, M. Wait-time and rewards as instructional variables, their influence on language, logic, and fate control: Part One-Wait-time. Journal of Research in Science Teaching, 1974, 11, 81-94.

Rubovits, P., & Maehr, M. Pygmalion analyzed: Toward an explanation of the Rosenthal-Jacobson findings. Journal of Personality and Social Psychology, 1971, 19, 197-203.

Rutter, M., Maughan, E., Mortimore, P., Ouston, J., & Smith, A. Fifteen thousand hours: Secondary schools and their effects on children. Cambridge: Harvard University Press, 1979.

Seaver, W. Effects of naturally induced teacher expectancies. Journal of Personality and Social Psychology, 1973, 28, 333-342.

Shavelson, R., Cadwell, J., & Izu, T. Teachers' sensitivity to the reliability of information in making pedagogical decisions. American Educational Research Journal, 1977, 14, 83-97.

Shavelson, R., & Stern, P. Research on teachers' pedagogical thoughts, judgments, decisions and behavior. Review of Educational Research, 1981, 51, 455-498.

Shore, A. Confirmation of expectancy and changes in teachers' evaluations of student behaviors. Dissertation Abstracts, 1969, 30, 1878A-1879A.

Smith, F., & Luginbuhl, J. Inspecting expectancy: Some laboratory results of relevance for teacher training. Journal of Educational Psychology, 1976, 68, 265-272.

Smith, M. Meta-analysis of research on teacher expectation. Evaluation in Education, 1980, 4, 53-55.

Swann, W., & Snyder, M. On translating beliefs into action: Theories of ability and their application in an instructional setting. Journal of Personality and Social Psychology, 1980, 38, 879-888.

Taylor, M. Race, sex, and the expression of self-fulfilling prophecies in a laboratory teaching situation. Journal of Personality and Social Psychology, 1979, 37, 897-912.

Tobias, S. Achievement treatment interactions. Review of Educational Research, 1976, 46, 61-74.

Weiner, B. A theory of motivation for some classroom experiences. Journal of Educational Psychology, 1979, 71, 3-25.

Weinstein, R. Reading group membership in first grade: Teacher behaviors and pupil experience over time. Journal of Educational Psychology, 1976, 68, 103-116.

Weinstein R., Marshall, H., Brattesani, K., & Middlestadt, S. Student perceptions of differential teacher treatment in open and traditional classrooms. Journal of Educational Psychology, in press.

Weinstein, R., & Middlestadt, S. Student perceptions of teacher interactions with male high and low achievers. Journal of Educational Psychology, 1979, 71, 421-431.

West, C., & Anderson, T. The question of preponderant causation in teacher expectancy research. Review of Educational Research, 1976, 46, 613-630.

Willis, B. The influence of teacher expectation on teachers' classroom interaction with selected children. Dissertation Abstracts, 1970, 30, 5072A.

Willis, S., & Brophy, J. The origins of teachers' attitudes toward young children. Journal of Educational Psychology, 1974, 66, 520-529.

Winne, P., & Marx, R. Students' and teachers' views of thinking processes for classroom learning. Elementary School Journal, in press.

Wise, R. Teacher and pupil factors related to teacher expectations for children. Dissertation Abstracts International, 1972, 33, 6191A.

Witkin, H., Moore, C., Goodenough, D., & Cox, P. Field-dependent and field independent cognitive styles and their educational implications. Review of Educational Research, 1977, 47, 1-64.

Zuckerman, M., DeFrank, R., Hall, J., & Rosenthal, R. Accuracy of nonverbal communication as determinant of interpersonal expectancy effects. Environmental Psychology and Nonverbal Behavior, 1978, 2, 206-214.